ZASTAVENKO, L.; PODGORETSKIY, M.

Effect of external fields on angular correlations in consecutive electromagnetic transitions. Zhur. eksp. i teor. fiz. 45 no.3: 706-708 S '63. (MIRA 16:10)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Angular momentum (Nuclear physics))
(Quantum theory)

ZASTAVENKO, L.G.

Accuracy of monthly mean temperatures and pressures. Trudy NIIAK no.1:96-113 '57. (MIRA 11:10)
(Atmospheric temperature) (Atmospheric pressure)

KHANEVSKAYA, I.V.; ZASTAVENKO, L.G.

Methods for determining temperature corrections associated with the conversion of altitudes from dynamic to geopotential meters. Trudy NIIAK no.1:131-143 '57. (MIRA 11:10)
(Atmospheric temperature)

ZASTAVENKO, L. G.

"Multiple Production of Heavy Particles in Two Nucleon Collisions," Nuclear Physics, Vol. 5, No. 1, Jan '58, p. 17 by V. S. Barshenkov, B. M. Barbashev, E. G. Bubelov and V. M. Maksimenko,

The authors thank Prof. D. I. Blokhintsev and I. L. Rozental for discussions and advice. They are also grateful to L. G. Zastavenko for discussions and assistance.

ZASTAVENKO, L. G., RYNDIN, R. M. and CHOU, KUANG-CHAO

"On Non-Uniqueness of Nucleon-Nucleon Scattering Phase Shifts."

Nuclear Physics, Vol. 6, No . 5, p. 669, 1958. No. Holland Publ. Co.

Joint Inst. of Nuclear Research.

56-2-45/51

AUTHORS: Zastavenko, L. G. , Ryndin, R. M. , Chzhou Guan-chzhao

TITLE: The Non-Uniquenesses of Phases in the Scattering of Nucleons by Nucleons (O neodnoznachnostyakh faz v rasseyanii nuklonov nuklonami)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 2, pp. 526 - 527 (USSR)

ABSTRACT: The cross section of the scattering of mesons by nucleons remains unchanged in the ansatz shown by Minami (reference 1). Two sets of phases by means of this ansatz originate from each other can be distinguished either by polarization experiments or by the investigation of the energy dependence of the cross section with small energies. The authors discuss analogous transformations for the case of the scattering of nucleons by nucleons. The elastic scattering of nucleons by nucleons is completely described by the matrix $M(\vec{k}, \vec{k}_0; \vec{\sigma}_1, \vec{\sigma}_2)\chi_i$. Here $\vec{\sigma}_1$ and $\vec{\sigma}_2$ denote the Pauli matrices of the two nucleons and $\vec{k}_0$ and $\vec{k}_1$ respectively, denote the unit-vectors in the directions of motion of enter-

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The Non-Uniquenesses of Phases in the Scattering of Nucleons by Nucleons

ing and scattered nucleons. The cross section of the scattering of non-polarized nucleons $\sigma_0 = (1/4)\,\mathrm{Sp}MM^+$ is invariant in relation to the substitution of $M(\vec{k}, \vec{k}_0, \vec{\sigma}_1, \vec{\sigma}_2)$ by one of the three matrices mentioned here. M is then expanded into spherical harmonics $Y_{ls}^{jm}(\vec{k})$, which describe the states with certain values of the total angular momentum j, its projection m, the orbital momentum l and the spin s. The values l and s are determined by the addition law of angular momentum and with s = 0 (singulet) l = j, and with s = 1 (triplet) are l = j, j ± 1). Then the authors investigate one of the above-mentioned transformations, namely $M_1 = (\vec{\sigma}_1\vec{k})M(\vec{\sigma}_1\vec{k}_0)$, and mention the expansion of this matrix into spherical harmonics. The matrices occurring in this development are discussed more detailed and are mentioned explicitly. The matrices $M_1 = (\vec{\sigma}_1\vec{k})M(\vec{\sigma}_1\vec{k}_0)$ and $M_2 = (\vec{\sigma}_2\vec{k})M(\vec{\sigma}_2\vec{k}_0)$ lead to singulet-triplet transitions. Therefore the first two transformations cannot take place in the case of a collision of nucleons of the same type where the singulet-triplet transitions are excluded by the Pauli principle. This also applies to the (n-p)-scattering, if the hypothesis of the isotopic

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56-2-45/51

The Non-Uniquenesses of Phases in the Scattering of Nucleons by Nucleons

invariance is correct. There are 3 references, 1 of which is Slavic.

ASSOCIATION: United Institute for Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

SUBMITTED: November 26, 1957

AVAILABLE: Library of Congress

1. Mesons-Scattering 2. Nucleons-Applications

Card 3/3

24(5)
AUTHOR: Zastavenko, L. G. SOV/ 56-35-3-36/61

TITLE: On the Problem of the Uniqueness of Phase Analysis
(K voprosu ob odnoznachnosti fazovogo analiza)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 3, pp 785 - 787 (USSR)

ABSTRACTS: S. Minami (Ref 1) reported on a transformation of the scattering matrix which does not change the differential cross sections, i. e. for the case in which particles with the spins 0 and 1/2 collide. The present paper deals with the analogous transformation for the case of any spins s_1 and s_2 of the colliding particles. The scattering matrix is expressed by a function which expresses the state of the system with the total moment j, of its projection M, and the projections α_1 and α_2 of the spins of the first and second particle on to a certain direction $\vec{n}$. A relation for this function and also for the conditon of invariance in reflections are written down. The author then investigates a double scattering for which he derives a cross section. The author thanks

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On the Problem of the Uniqueness of Phase Analysis SOV/56-35-3-36/61

Professor M. A. Markov, Professor Ya. A. Smorodinskiy, R. M. Ryndin, M. I. Shirokov, and **Chou Kuang-chao** for discussing this paper and for their useful comments. There are 7 references, 5 of which are Soviet.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (United Institute for Nuclear Research)

SUBMITTED: May 5, 1958

Card 2/2

ZASTAVENKO, L.G.; CHZHOU GUAN-CHZHAO [Chou Kuang-chao]

Integral transformations of the I.S. Shapiro type for zero-mass particles. Zhur. eksp. i teor. fiz. 38 no.1:134-139 Jan '60. (MIRA 14:9)

1. Ob"edinennyy institut yadernykh issledovaniy.
(Transformations (Mathematics)) (Particles (Nulcear physics))

8h405

S/056/60/039/004/023/048
B006/B063

24.6210

AUTHORS: Zastavenko, L. G., Podgoretskiy, M. I.

TITLE: Effect of External Fields Upon the Angular Correlations and Resonance Processes Occurring During Quantum Transitions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 1023-1026

TEXT: A general method of determining splittings and shifts of quantum levels during the emission of light and gamma radiation was suggested by Podgoretskiy in Ref. 5. To illustrate the application of this method, the authors describe a theoretical investigation of the scattering of light and gamma rays by isolated and overlapping magnetic sub-levels. The Stark effect is studied, and the Stark constant of an excited atom is determined by studying the resonance scattering of light in parallel electric and magnetic fields. The first section deals with the Stark splitting of excited atomic levels. The authors suggest determining the Stark constants by determining the dependence of resonance scattering on the magnetic field in the presence of a constant electric field, that is to say,

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Effect of External Fields Upon the Angular Correlations and Resonance Processes Occurring During Quantum Transitions

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B006/B063

determining the Stark constants from the narrow peaks of the curve, which are due to overlapping levels of different m. Nuclear quadrupole splitting may be measured analogously, by studying the non-monotony of the curve representing the γ-γ correlation as a function of the magnetic field strength if $\vec{H}$ is parallel to the electric field of the crystal. The second section deals with the effect of the magnetic field upon the resonance scattering of gamma rays under conditions permitting the use of Mössbauer's technique. Cross-section formulas and formulas for the angular distribution in resonance scattering in the absence of a field and in the presence of a strong field are derived. The authors thank Professor M. A. Markov and Professor I. Ya. Pomeranchuk for discussions. There are 8 references: 1 Soviet, 3 US, 2 German, 1 British, and 1 Swiss.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: April 19, 1960

Card 2/2

S/169/62/000/001/050/083
D228/D302

3,5000

AUTHOR: Zastavenko, L. G.

TITLE: Some peculiarities of the baric field in January and July over the northern hemisphere

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 1, 1962, 44, abstract 1B285 (Tr. N.-i. in-ta aeroklimatol., no. 14, 1961, 23-24)

TEXT: Some features of the average baric field of the troposphere and lower stratosphere up to 100 mb (15 - 17 km) are considered. The maps of baric topography are constructed from the data of 320 points averaged out for 1950 - 1956. The maps of the absolute geopotential of all isobaric surfaces are quantitatively coordinated through the relative topography of intermediate layers with the corresponding temperature maps. An AT-850(AT-850) map for the whole northern hemisphere was compiled on the basis of these data, and the maps of the absolute topography of other isobaric surfaces over Eurasia and circumpolar areas were analyzed in more de-

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B

S/169/62/000/001/050/083
D228/D302

Some peculiarities of ...

tail. Certain peculiarities of the transformation of the baric field with altitude above the northern hemisphere are considered. Definite changes in the baric field take place, too, under the influence of the thermal conditions in the upper troposphere and lower stratosphere, buts its complete reorganization, corresponding to the thermal field of the stratosphere, still does not occur at heights of 16 - 17 km. Such a reorganization should be expected in the somewhat higher layers of the atmosphere. It is noted that the Icelandic and Aleutian minima and the Siberian maximum are low baric formations. On the AT-500 (AT-500) maps for January the trough to the south of Alaska corresponds to the increased frequency of high cyclones over the Aleutian depression's eastern part. The high frequency of anticyclones should be observed above the Azores minimum throughout the year, since a belt of high pressure, whose existence is largely determined by the general direction of the temperature gradient, is situated over subtropical and tropical latitudes in the troposphere. 25 references. [Abstractor's note: Complete translation.]

Card 2/2

29296 S/051/61/011/004/001/004
24.3600 (1144, 1385, 1482) E032/E514

AUTHORS: Zastavenko, L.G. and Khrustalev, O.A.

TITLE: Application of the interference of quantum levels to the determination of the lifetimes of optical transitions

PERIODICAL: Optika i spektroskopiya, v.11, no.4, 1961, 441-444

TEXT: The authors discuss the determination of the natural level width from the measured intensity of resonance scattering of light through a given angle as a function of external fields applied to the scattering medium. Two cases are considered, namely 1) electric and magnetic fields parallel, and 2) the case where the excited state levels of the scattering atom are split by the interaction between the electrons and the nuclear spin, and the scattering system is located in an external magnetic field. In the absence of external fields the differential scattering cross-section is given by

$$W = \left| \sum_{m=-j}^{j} A_m \right|^2 \qquad (1)$$

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where j is the angular momentum, m is its z-component and A_m is the resonance scattering amplitude. In a strong magnetic field each term splits into $2j + 1$ levels, which are located symmetrically relative to the level $m = 0$. Here the cross-section is given by

$$W = \sum_{m=-j}^{j} |A_m|^2 \qquad (3)$$

If in addition a magnetic field is applied in the direction of the z-axis, the levels with z-components m and $-m$ are equally shifted and the fields can be chosen so that some of the levels with different m will coincide, i.e. $E_{m_1} = E_{m_2}$ when $m_1 \neq m_2$.

This will give rise to interference so that the cross-section becomes

$$W = |A_{m_1} + A_{m_2}|^2 - |A_{m_1}|^2 - |A_{m_2}|^2 + \sum_{m=-j}^{j} |A_m|^2 \qquad (4)$$

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Application of the interference ... S/051/61/011/004/001/004
E032/E514

With a constant electric field, the curve representing the resonance scattering as a function of the magnetic field consists of horizontal sections with narrow extrema corresponding to the partial overlap of levels with different m (Ref.2: L. G. Zastavenko, M.I. Podgoretskiy, ZhETF, 39, 1023, 1960). In the simple case where only two levels with energies E_1 and E_2 interfere, the intensity of the scattered light in the neighbourhood of these extrema is given by

$$\frac{W}{W_o} = 1 + \frac{2\mathrm{Re}(AB^*) - 2\mathrm{Im}\,\dfrac{(AB^*)\tau(E_1 - E_2)}{h}}{W_o\left\{1 + \left[\dfrac{\tau(E_1 - E_2)}{h}\right]^2\right\}}$$

where W_o is the intensity well away from the extremum and A and B depend on the properties of the levels, the polarization of the light and the angle of scattering. For given angles and polarizations, the quantities A and B have the same phase and

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the intensity near an extremum is given by

$$\frac{W}{W_o} = 1 + \frac{2|AB|}{W_o\left[1 + \frac{\tau^2(E_1 - E_2)^2}{h^2}\right]} \qquad (6)$$

The width of this curve depends solely on the natural width of the line and the g-factor. It follows that it can be used to determine the lifetime τ. Moreover, it can be shown that the situation is not affected by the Doppler frequency shift due to the motion of the atoms. The second of the above two cases is not discussed in its general form although a formula is derived for the special case of five coincident levels when $H \to 0$. There are 1 figure and 4 references: 3 Soviet and 1 non-Soviet. The English-language reference reads as follows: Ref.3: F.D.Colegrove, P.A.Franken, R.R.Lewis and R.N.Sands, Phys.Rev.Lettr., 3,420,1959.
The work was done on the initiative of M. I. Podgoretskiy.
SUBMITTED: December 3, 1960

Card 4/4

ZASTAVENKO, L.G.; CHILOK, A.; SARANTSEVA, V.R., tekhn. red.

[Angular and energy distributions of fast μ-mesons penetrating deep into the earth from the atmosphere]Uglovoe i energeticheskoe raspredelenie bystrykh μ-mezonov, proniknikhikh iz atmosfery na bol'shuiu glubinu v zemliu. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1962. 7 p. (MIRA 15:12)
(Cosmic rays) (Mesons)

ZASTAVENKO, L.G.; CHILOK, A.; SARANTSEVA, V.R., tekhn. red.

[Use of the stationary phase method in solving kinetic equations] Primenenie metoda statsionarnoi fazy k resheniiu kineticheskikh uravnenii. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1962. 8 p.

(MIRA 15:12)

(Mesons—Scattering) (Differential equations)

S/038/62/026/005/002/003
B112/B186

AUTHOR: Zastavenko, L. G.

TITLE: Generalization of the Laplace transformation

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya matematicheskaya, v. 26, no. 5, 1962, 687-720

TEXT: The inversion of the integral transformation

$$F(p) = \int_0^\infty \psi(pt)f(t)dt \qquad (1.3)$$

is considered for a class of kernels $\psi(x)$ which are "near" to e^{-x}. If the function $f(t)$ is analytic, the inverse transformation will have the form

$$f(t) = (1/2\pi i)\int_L \tilde{\psi}(pt)F(p)dp, \qquad (1.6)$$

where

$$\tilde{\psi}(z) = \sum_{n=n_{min}} z^n/\Gamma(1+n), \qquad (1.4)$$

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$$\chi(z) = \int_0^\infty \psi(t)t^{z-1}dt; \qquad (1.5)$$

but otherwise it will have the form

(1.7).

The function f(t) has to satisfy restrictions such that the absolute convergence of the integral (1.7) is guaranteed. Attempts were made to generalize Cartwright's theorem quoted from G. Hardy's book "Raskhodyashchiyesya ryady" ("Divergent Series"), IIL, Moscow, 1951.

SUBMITTED: May 12, 1961

Card 2/2

ACCESSION NR: AP4042381 S/0056/64/047/001/0134/0138

AUTHORS: Zastavenko, L. G.; Chilok, A.

TITLE: Angular and energy distributions of fast nuons penetrating the earth from the air

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 1, 1964, 134-138

TOPIC TAGS: cosmic ray, muon, angular distribution, energy distribution, meson scattering

ABSTRACT: The authors calculate the angular and energy distribution of muons penetrating the earth from the atmosphere, at a large depth (4×10^4 g/cm^2) in the angle region $\cos\theta < -0.4$ ($\cos\theta = 1$ corresponds to the downward direction) and with energy $k \geq 0.75$ BeV. Such muons, when scattered at large angles, constitute an interference with the experiment proposed by Markov and Zhelezny*kh (M. A. Markov, paper at 1959 Rochester conference; I. V. Zhelezny*kh, diploma thesis, FIAN

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ACCESSION NR: AP4042381

1958). Particular attention is paid to the density of the muons arriving from above. The calculation is carried out more accurately than in the single-scattering approximation, with the kinetic equations encountered in multiple-scattering theory, solved by a method previously proposed by the authors (preprint, OIYaI, R-1113, Dubna, 1963). While the results agree with the single-scattering approximation, the difference between the two is far from negligible. "In conclusion, the authors are deeply grateful to Professor G. T. Zatsepin and Professor M. A. Markov for suggesting the work, and to the many staff members of the mathematical sector of LTP and of the OIYaI computation center for help with the calculations. Orig. art. has: 9 formulas and 2 tables.

ASSOCIATION: Ob"yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 27Oct62 ENCL: 00

SUB CODE: NP NR REF SOV: 003 OTHER: 002

2/2

ZASTAVENKO, L.G.; CHILOK, A.

Angular and energy distributions of fast μ-mesons penetrating the earth from the atmosphere. Zhur. eksp. i teor. fiz. 47 no.1:134-138 Jl '64. (MIRA 17:9)

1. Ob"yedinennyy institut yadernykh issledovaniy.

ZASTAVENKO, I.G.

Annual variation of absolute geopotential in the troposphere of the northern hemisphere. Trudy NIIAK no.31:59-89 '65.
(MIRA 18:8)

ZASTAVENKO, L.G.

Zonal characteristics of the pressure field over the northern hemisphere. Trudy NIIAK no.28:69-88 '64 (MIRA 18:2)

ZASTAVENKO, L.O.; CHILOK, A.

Use of the stationary phase method in solving kinetic equations. Dokl. AN SSSR 158 no.2:305-308 S '64. (MIRA 17:10)

1. Ob"yedinennyy institut yadernykh issledovaniy. Predstavleno akademikom N.N.Bogolyubovym.

ZASTAVENKO, L.G.; KHANEVSKAYA, I.V.

Accuracy and methodology in constructing mean temperature and absolute geopotential charts. Trudy NIIAK no.16:3-15 '62.
(MIRA 15:11)

(Meteorology)

ZASTAVENKO, L. G.

Generalization of the Laplace transform. Izv. AN SSSR. Ser. mat. 26 no.5:687-720 S-O '62. (MIRA 15:10)

(Laplace transformation)

ZASTAVENKO, F.Ya., inzh.; USTYUZHANIN, F.V., inzh.; SHAYDO, N.M., inzh.

Effectiveness of preventive measures against sudden outbursts of coal and gas. Bezop. truda v prom. 8 no.12:3-5 D '64. (MIRA 18:3)

1. Gosudarstvennyy komitet pri Sovete Ministrov UkrSSR po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru.

ZASTAVENKO, P.Ya.

Create a controlled angle drilling machine for use on steeply pitching seams. Bezop. truda v prom. 7 no.12:25-26 D '63. (MIRA 18:7)

1. Nachal'nik ugol'nogo otdela Gosudarstvennogo komiteta pri Sovete Ministrov UkrSSR po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru.

SAVENKO, Lyudmila Vasil'yevna, kand. tekhn. nauk; OZERKIN, Mikhail Illarionovich, inzh.; ZASTAVENKO, P.Ya., inzh., retsenzent; CHUMACHENKO, T.I., red.izd-va; VEREZOVYY, V.N., tekhn. red.

[Degasification of accessory minerals in coal seams]Degazatsiia sputnikov ugol'nykh plastov. Kiev, Gostekhizdat USSR, 129 p. (MIRA 16:3)
(Mine gases)

ZASTAVENKO, P.Ya., inzh.; SHAYDO, N.M., inzh.

Coal mining and roof control in steep middle-high coal beds.
Bezop.truda v prom. 6 no.6:25-26 Je '62. (MIRA 15:11)

1. Komitet po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru pri Sovete Ministrov UkrSSR.
(Donets Basin—Coal mines and mining)

SHASHKIN, V.L., red.; ZASTAVENKO, V.S., red.; BORISOVSKAYA, M.A., red.; POPOVA, S.M., tekhn. red.

[Radiometry of ores] Voprosy rudnoi radiometrii; sbornik statei. Moskva, Gosatomizdat, 1962. 214 p. (MIRA 15:7)
(Radioactive substances--Spectra)
(Radioactive prospecting)

GUBAREV, Ye.M. [Hubariev, IE.M.]; ZASTAVNAYA, T.S. [Zastavnaĭ, T.S.]

Gelatinase activity of Proteus vulgaris. Mikrobiol.zhur. 23 no.1:39-45 '61. (MIRA 14:5)

1. Rostovskiy meditsinskiy institut.
(PROTEUS) (GELATINASE)

ZASTAVNIY, F.D. [Zastavnyi, F.D.]

The L'vov-Volyn' basin and outlook for the development of chemical industry in the western provinces of the Ukrainian S.S.R. Dop. ta pov. L'viv. un. no.7:pb.3:123-27 '57. (MIRA 11:2)
(Lvov-Volyn Basin--Chemical industries)

ZASTAVNIY, FEDOR DMITRIYEVICH

EPP
.R93455

L'VIVS'KO - VOLYNS'KYY - VUGIL'NYY BASEYN [THE ALVIV (L'VOV) - VOLINSK COAL BASIN] L'VIV, KNYZHKOVO-ZHURNAL'-NE VYDAVNYTSTVO, 1956.
103, [1] P. ILLUS., MAPS, PORTS., TABLES.
"VYKORYSTANA LITERATURA": P.103-104

NOVOGRENKO, N.M., inzh.; KIRBYAT'YEV, L.N., inzh.; ZASTAVNOY, I.T., insh.

Nonpolarized high-speed BVP-4 electric cutout. Vest. elektroprom. 32 no.5:72-75 My '61. (MIRA 15:5)
(Electric cutouts)

NOVOGRENKO, N.M.; KIRBYAT'YEV, L.N.; ZASTAVNOY, I.T.

Use of an AB-1-type automatic device for protecting the N60 electric locomotive from generator currents. Elek.i tepl.tiaga 6 no.12:28-31 D '62. (MIRA 16:2)

1. Nachal'nik konstruktorskogo otdela elektricheskikh apparatov Novocherkasskogo nauchno-issledovatel'skogo instituta elektrovozostroyeniya (for Novogrenko). 2. Novocherkasskiy nauchno-issledovatel'skiy institut elektrovozostroyeniya (for Kirbyat'yev, Zastavnoy).

(Electric locomotives—Safety measures)
(Electric protection)

NOVOGRENKO, N.M.; KIRBYAT'YEV, L.N.; ZASTAVNOY, I.T.

The BVP nonpolar quick-break switch. Biul. tekh.-ekon. inform. no. 4:43-45 '61. (MIRA 14:5)
(Electric switchgear)

ZASTAWNIAK, Fr.

Two books on precious stones. Problemy 19 no.1:61-63 '63.

ZASTAVNYY, F.D., kand.ekon.nauk

Practicbility of industrial use of peat in the western provinces of the Ukraine. Torf. prom. 35 no.3:21-23 '58. (MIRA 11:5)

1.L'vovskiy gosudarstvennyy universitet.
(Peat)

ZASTAVNYY, M.A.

Volume weight determination. Ogneupory 18 no.7:323-324 Jl '53.
(MLRA 11:10)

1.Pedal'skiy shametnyy zavod.
(Weights and measures)

ZASTAWNIAK, F.

"Investigating Platinum Alloys by the Iodine Testing Method. p. 339 (ROCZNIK. Vol. 22, No. 3, 1952 (published 1954); Krakow, Poland.)

So: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4, April 1955, Uncl..

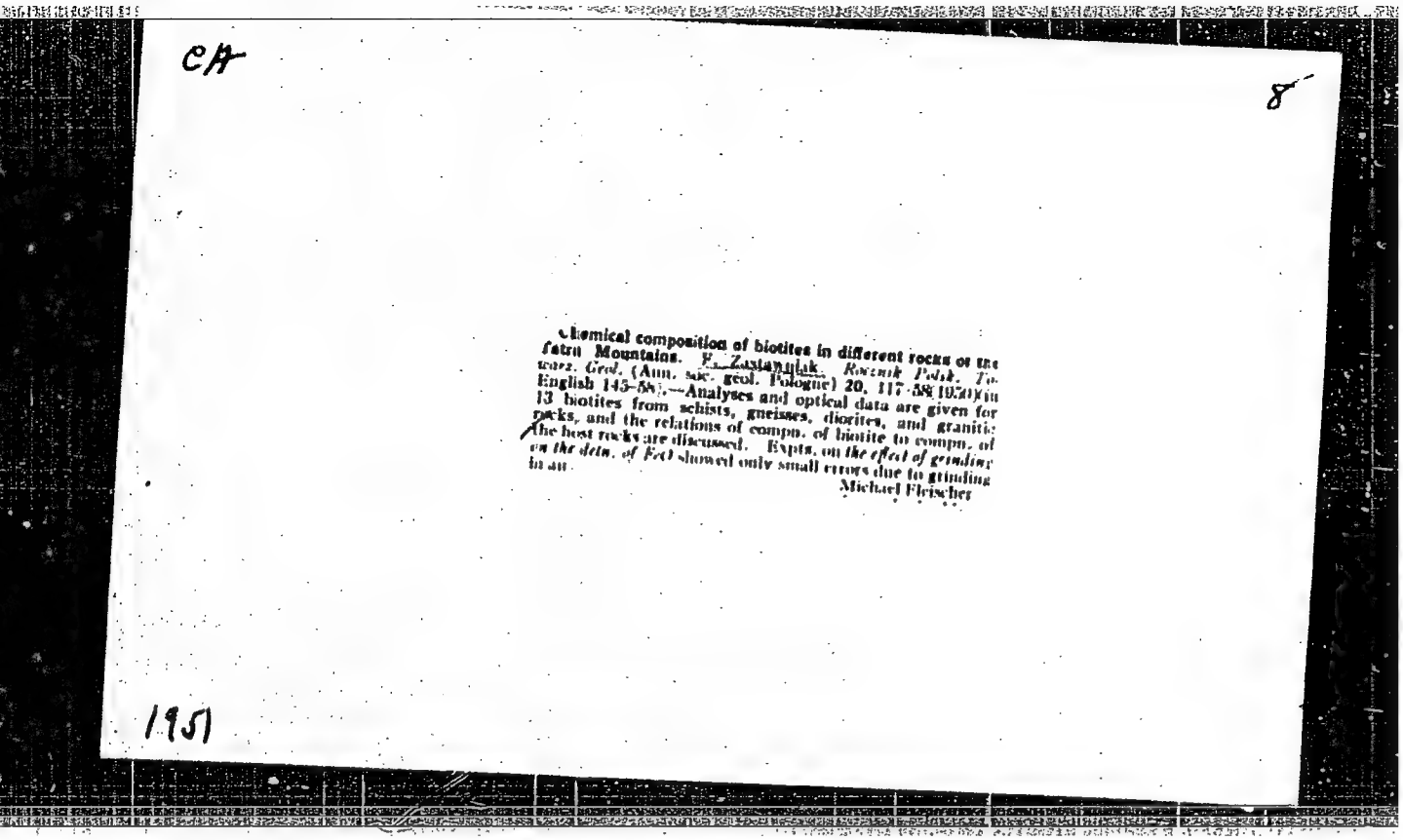
Zastawniak

[illegible] platinum alloys by the iodine testing method. P. Zastawniak. *Rocznik Polsk. Towarz. Geol.* 22, 233-62 (1952)(Pub. 195[illegible]) (in English 249-52).—Alloys of unknown compn. are tested by making an impression on a [illegible] corundum touchstone on which is placed a soln. made up of 35 ml. HCl, 15 ml. HNO_3, and 2.5 g. KI. Pt-Cu alloys contg. 85% Pt are attacked in 30 sec., 90-2% in 1 min.; the Pt content can be detd. fairly accurately by direct comparison with known alloys. Pd alloys can be recognized by their leaving a brown spot. Michael Fleischer

MROWEC, S.; WERBER, T.; ZASTAWNIK, M.

Mechanism of the solid state reaction in the nickel—chromium—
—sulfur system. Pt.1. Bul chim PAN 13 no.1:27-32 '65.

1. Department of Inorganic Chemistry of the School of Mining and Metallurgy, Krakow, and Department of Physics of Krakow Technical University. Submitted October 26, 1964.



CA

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Chemical composition of biotites in different rocks of the Tatra Mountains. E. Zastawniak. *Rocznik Pols. Tow. Geol.* (Ann. soc. geol. Pologne) 20, 117-58 (1950) (in English 145-58).—Analyses and optical data are given for 13 biotites from schists, gneisses, diorites, and granitic rocks, and the relations of compn. of biotite to compn. of the host rocks are discussed. Expts. on *the effect of grinding on the detn. of FeO* showed only small errors due to grinding in air.

Michael Fleischer

1951

ZASTAWNIK, Tadeusz, mgr inż.

The price of copper. Przegl techn 85 no.48:7 29 N '64

1. Chief Executive, Copper Mining and Metallurgy Concern, Lubin.

MOSCICKI, Wl.; ZASTAWNY, A.

The C14-dating Laboratory in Gdansk. Acta physica Pol 20 no.11: 941-942 '61.

1. Laboratory of Absolute Geochronology, Institute of Nuclear Studies, Gdansk.

(Radiocarbon dating)

MOSCICKI, WL.; ZASTAWNY, A.

The C14-dating in Gdansk. Acta physica Pol 20 no.11:941-942 '61

1. Laboratory of Absolute Geochrpnology, Institute of Nuclear Studies, Gdansk.

MOSCICKI, Wlodzimierz; ZASTAWNY, Andrzej

Apparatus used in the Laboratory of Absolute Geochronology for determining the age of samples by the ^{14}C procedure. Nukleonika 7 no.12:801-817 '62.

1. Institute of Nuclear Research, Laboratory of Absolute Geochronology Gdansk, Polish Academy of Sciences.

ZASTAWNY, Andrzej

Low-level impulse amplitude discriminator. Nukleonika 8 no.5:345-354 '63.

1. Katedra I Fizyki, Politechnika, Gdansk.

85300

S/019/60/000/016/100/134
A152/A029

26.1130

AUTHORS: Bulavkin, A.A.; Smirnov, V.P.; Yevtyugin, A.G.; Zastela, Yu.K.; Kosterin, V.A.; Petrov, E.A.; Rzhevskiy, Ye.V.; Khismatullin, A. Ya.; Shipulina, A.V.; Miropol'skaya, L.G.

TITLE: A Method of Stabilization of the Combustion Zone in the Combustion Chambers of Ram-Jet Engines

PERIODICAL: Byulleten' izobreteniy, 1960, No. 16, p. 56

TEXT: Class 46g, 2_{03}. No. 131162 (469300/40 of July 8, 1958). This method of stabilization of the combustion zone in the combustion chambers of ram-jet engines with liquid fuel feed into the moving air stream by an atomizing nozzle is distinguished by the following special feature: in order to reduce pressure losses in the stabilizing device, stabilization of the combustion zone is created by feeding compressed air in a radial direction from the nozzle axis through a narrow annular slot placed in front of the nozzle.

Card 1/1

ZASTELLO, B.I., inzh.; SARAPKIN, V.V., inzh.

Use of the distributed inductance of the wires for high-frequency transmission of information on electric power lines. Elek sta. 34 no.11:80-83 N '63. (MIRA 17:2)

ZASTENKER, B. Ya.

Mining Engineer. "The System of Working Sub-Level Drifts by the Shrinkage System", Tsvet. Met. 14, No 6, 1939.

Report U-1506, 4 Oct. 1951.

ZASTENKER, E. I.

26790 SSSR v gody verikoy otechentvennoy voyny i v gody bor'by za vpolneniye poslevoennoy stalinskoy pyatiletki (1941-1949). (Obzor khudof literatury). Prepodavanie istorii shkole, 1949, No. 4, s. 84-91

SO: LETOPIS' NO. 35, 1949

SUKHAREV, V.I., prof.; ETINGIN, B.Z.; ZASTENKER, F.S.; IOFINA, O.S.; BOGDANOVICH, L.I.; KRYLOV, N.P.; SULTANOV, A.A.; SPERANSKIY, A.P., red.

[Physical therapy, massage and exercise therapy] Fizioterapiia, massazh i lechebnaia fizkul'tura. Moskva, Meditsina, 1965. 298 p. (MIRA 18:6)

1. Zaveduyushchiy kabinetom lechebnoy fizkul'tury Azerbaydzhanskogo instituta kurortologii i fizioterapii (for Sultanov). 2. Zaveduyushchaya kabinetom lechebnoy fizkul'tury Moskovskoy gorodskoy bol'nitsy No.40 (for Iofina).

ZASTENKER, G., inzh.-tekhnolog

"New developments in food serving enterprises." Reviewed by G. Zastenker. Obshchestv. pit. no.12:7 D '62. (MIRA 16:1)

1. Glavnoye upravleniye rabochego snabzheniya Ministerstva rechnogo flota.

(Restaurants, lunchrooms, etc.)

SOLNTSEV, G.S.; ZASTENKER, G.N.

Effect of air moisture on the formation of a microwave flash discharge. Radiotekh. i elektron. 3 no.6:811-818 Je '58. (MIRA 11:6)

1.Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.
(Moisture) (Microwaves) (Electric discharges through gases)

2590

9.3150 (1049, 1140, 1532)
26.2340

S/109/60/005/010/019/031
E033/E415

AUTHORS: Zastenker, G.N., Solntsev, G.S. and Shvilkin, B.N.

TITLE: Processes in a High-Frequency Discharge of Low-Pressure With Change of Electrode Voltage

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10, pp.1709-1716

TEXT: A possible mechanism of a high-frequency discharge of low-pressure is described. The explanation assumes a re-distribution of the field in the discharge gap and constant field strength in the plasma for different applied voltages. The relationships between the electron density, the discharge current and the voltage are deduced and the calculated data is compared with results obtained experimentally by investigation of the current and illumination intensity of a 12 Mc/s discharge in air (0.4 to 30 mm Hg pressure) with external electrodes. The mechanism, which sustains the constant field strength in the plasma with over-voltage, may be, in the authors' opinion, a re-distribution of the field strength in the discharge gap, such that the field strength in the central part remains equal to the breakdown value, but increases in the neighbourhood (within

Card 1/6

Processes in a High-Frequency ...

distance d_1) of the electrodes. The electron density is idealized: in the near-electrode regions, the electron-density is assumed negligibly small, i.e. zero, and in the central regions, it has a constant value n. It is deduced that, for $pd \gg 30$ mm Hg · cm

$$n = \frac{m\omega\nu_{cm}d}{8\pi e^2 d_1}\sqrt{(1+W)^2-1}, \qquad (6)$$

where m is the mass of an electron, ω is the angular frequency of the field ν_{cm} is the frequency of collisions of electrons with neutral molecules, d is the gap length, e is the electron charge, W is the over-voltage

$$W = \frac{U_o - E_3 d}{E_3 d}$$

U_o is the maximum amplitude of the voltage applied to the discharge gap, and E_3 is the field strength at which breakdown occurs. In this case, attachment of electrons to the molecules of the electro-negative gas is the basic de-electronization process.

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Processes in a High-Frequency ...

For the case when $1 < pd < 30$ mm Hg · cm, then, in a pulsed "striking" regime, free diffusion is the basic de-electronization process and

$$n = \frac{m\omega\nu_{cm}d}{8\pi e^2 d_1}\sqrt{(1+W)^2\frac{E_э^2}{E_{э\,мин}^2}-1}. \qquad (6a)$$

where $E_{э\,мин}$ ($E_{э\,min}$) is the breakdown field strength for high pd values, and $E_э$ is the actual breakdown field strength. To check the relationships (6) and (6a), it was necessary to establish the connections between the electron density and the measured discharge current, and also between the current and the voltage across the gap. To conform to the method of measurement, in which a compensation circuit was used, the "inter-electrode capacity current" ($i\omega S U / 4\pi d$; S = the cross-sectional area of the discharge tube, U = the voltage applied across the gap) was excluded. Then the amplitude of the measured current depends on the electrode voltage and electron density as follows:

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$$I_0 = \frac{U_3 \omega S \varepsilon^2 (d - 2d_1)\, n}{d \sqrt{(\omega m d \nu_{em})^2 + (\omega^2 m d - 8\pi d_1 e^2 n)^2}} \quad (7)$$

From (6) and (7), the discharge current is related to the over-voltage by

$$I_0 = \frac{U_3 \omega S (d - 2d_1)}{8\pi d d_1} \sqrt{(1 + W)^2 - 1}, \quad (8)$$

where U_3 is the amplitude of the breakdown voltage. A similar expression can be obtained for low pd values by using Eq.(6a) and (7). By re-arrangement of Eq.(7), the density is found by

$$n = \frac{8\pi n \omega^2 d_1 d^3 + m\omega\nu_{em} d^2 \sqrt{(U_3/I_0)^2 \omega^2 S^2 (d - 2d_1)^2 - (8\pi d d_1)^2}}{e^2 \left[(U_3/I_0)^2 \omega^2 S^2 (d - 2d_1)^2 - (8\pi d d_1)^2\right]}. \quad (9)$$

The experimental set-up was designed for studying the ionization state of the gas in the gap with different voltages across it. The integral intensity of the glow discharge was registered and the discharge current was measured. The block schematic is given and

Processes in a High-Frequency ...

the set-up is described. The tube diameter was 40 mm, length 21 mm, and the diameter of the external plane-parallel electrodes was 70 mm. The supply oscillator power was approximately 800 watts with a very low internal impedance. The pulsed operation permitted the discharge to be studied immediately after its formation before the heating of the gas exerted any effect. The volt-ampere characteristics of the discharge for different pressures are given. The steepest increase of current with increase of voltage corresponds to the transition from the form of discharge, where the volume processes play the basic role, to the form where electron emission from the walls is fundamental (from the α- to the γ-discharge). The following results are presented graphically and their interpretation discussed: 1) dependence of the discharge current on the over-voltage, 2) the electron density dependence on the over-voltage. Calculated results are given on the same graphs for purpose of comparison. There are 6 figures and 12 references: 5 Soviet and 7 non-Soviet.

Card 5/6

21596
S/109/60/005/010/019/031
E033/E415

Processes in a High-Frequency ...

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova (Physics Faculty of Moscow State University imeni M.V.Lomonosov)

SUBMITTED: December 11, 1959

Card 6/6

ACC NR: AP6034570 SOURCE CODE: UR/0020/66/170/006/1306/1309

AUTHOR: Gringauz, K. I.; Bezrukikh, V. V.; Khokhlov, M. Z.; Zastenker, G. N.; Remizov, A. P.; Musatov, L. S.

ORG: none

TITLE: Experimental results from observations of the lunar ionosphere performed by the first artificial lunar satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 6, 1966, 1306-1309

TOPIC TAGS: lunar atmosphere, ionosphere, ion trap, electron trapping, electron flux, lunar satellite / Luna-10 lunar satellite

ABSTRACT:

In an accompanying review article on the Luna-10*, a brief description is given of the two low-energy ion and electron traps that were carried by the satellite. K. I. Gringauz et al have subsequently published a preliminary analysis of the data from these traps, and have made some tentative deductions concerning the nature of the lunar ionosphere.

One difficulty in the trap measurements has been the generally low concentration of charged particles in the lunar ionosphere. Another is the uncertainty as to what effect the unknown surface charge status of the satellite might have on the registered particle levels. It was to counter the latter effect that traps for both thermal ions and thermal electrons were installed, each with a form of square-

UDC: 537.591

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wave gating. The ion trap had twin orthogonal elements and a common collector, as seen in Fig. 1(a); input flux was grid-modulated by a square biasing wave, -3 to +7 v. Output was detected by an amplifier tuned to this modulation frequency [unspecified]. To further overcome spurious local charge effects, the outermost grid was also modulated at 2-minute intervals by a square wave between 0 and -50 v. The electron trap outer grid was similarly modulated, but between 0 and +50 v. Interrogation of the traps was performed at 2-minute intervals. It was pointed out that rotation or tumbling of the satellite, with a period of about 40 seconds, caused "irregularity" in the measurements; this point was not elaborated on.

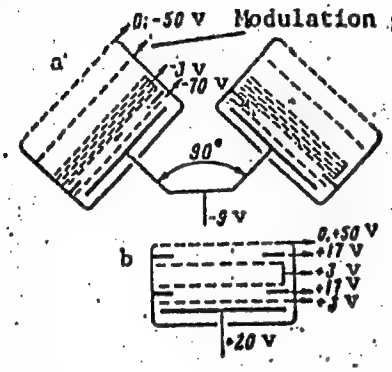
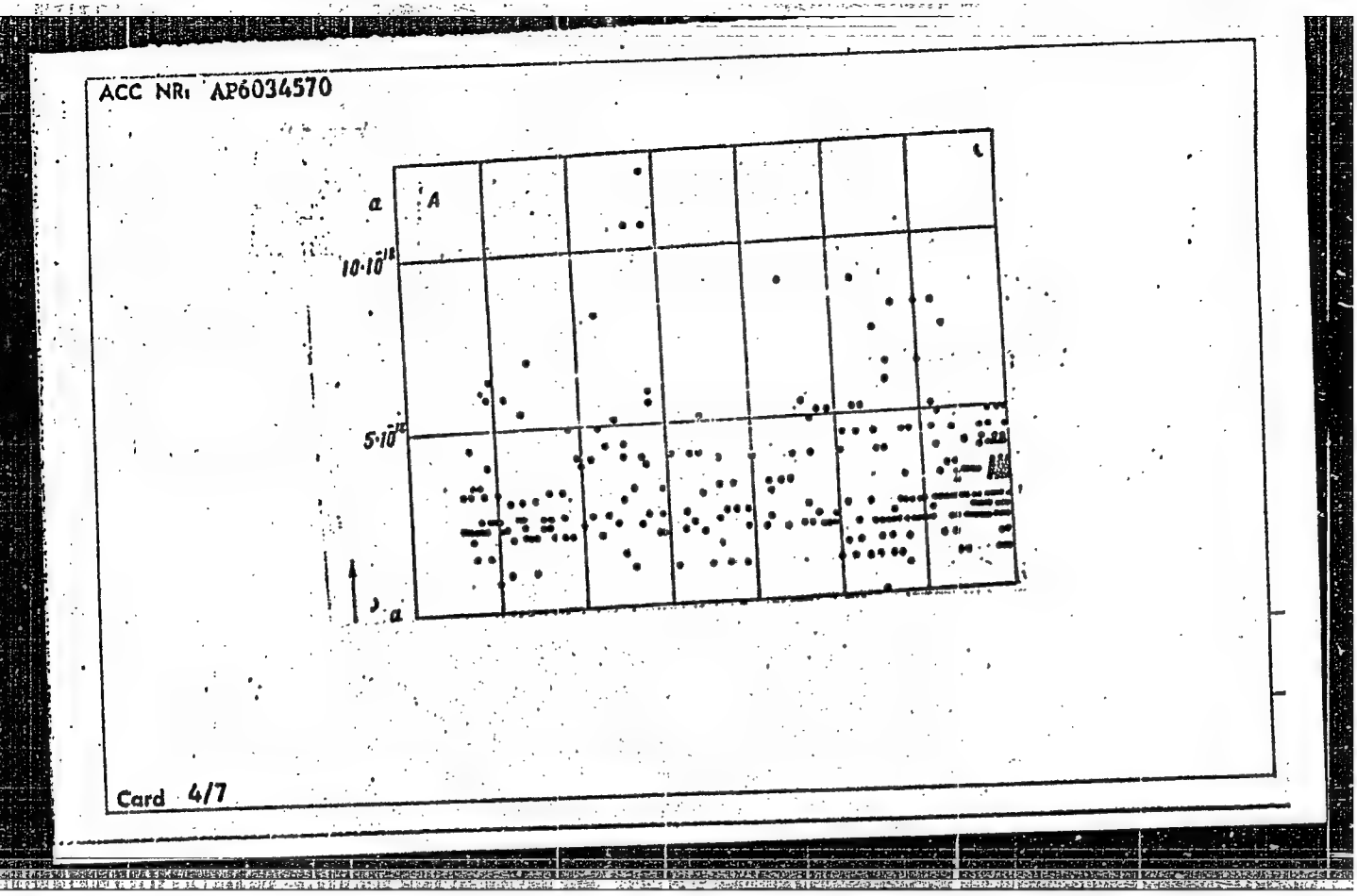


Fig. 1. Ion trap (a) and electron trap (b)

Data from the ion trap have provided some idea of ion distribution in the vicinity of the Moon, but do not yield a breakdown between thermal and possibly higher energy ions. Calculated ion currents from some 450 readings are shown as a function of altitude in Fig. 2, for the general cases where the Moon was 1) within and 2) outside of the Earth's magnetosphere. A perceptible drop in ion current is seen when the Moon and its satellite entered the magnetosphere — on the average, from 3.1×10^{-12} amp to 2.3×10^{-12} amp. It also appears that there is no strong correlation of ion density with lunar altitude, nor with change in bias of the trap's external grid. If it is assumed that the ions encountered were thermal, i.e., that the satellite's orbital velocity greatly exceeded ion thermal velocities, then the calculations show a maximum ion density near the Moon of about $100/cm^3$. However, a varying component of ion flux was noted which could be correlated with solar wind flux; this fact, plus the nondependence of measured flux on altitude or grid biasing, suggest that at least part of the recorded ions were at energies well above thermal, in which case the ion density estimate would have to be revised downward.

The satellite's electron count, both in free space and in the magnetosphere, showed discrete high and low levels (Fig. 3). The



ACC NR: AP6034570

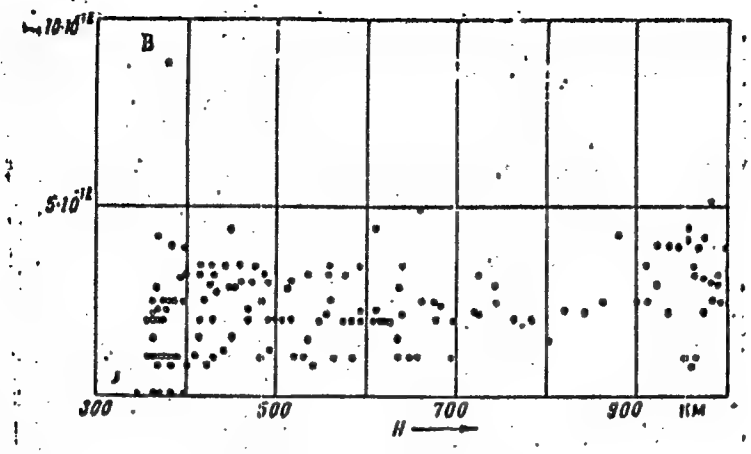


Fig. 2. Ion current

A - Moon outside magnetosphere;
B - Moon within magnetosphere.

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high current levels were evidently caused by photoelectrons from the satellite surface elements, since the levels dropped sharply when the satellite entered lunar night. As with the ion readings, the average electron flux was greater in free space (7.2×10^{-10} amp) than in the magnetosphere (4.8×10^{-10} amp). The corresponding densities, assuming energies on the order of 1 ev, were calculated at $80/cm^3$ and $60/cm^3$ respectively, and $15—20/cm^3$ on the lunar night side. Whereas the electron trap readings may have been erroneously increased by photoelectrons, they may also have been decreased due to interception of low-energy electrons by trap elements; laboratory tests have shown that diversion of the latter type at the 1-ev level can reduce true readings by a factor of 3 or 4. The

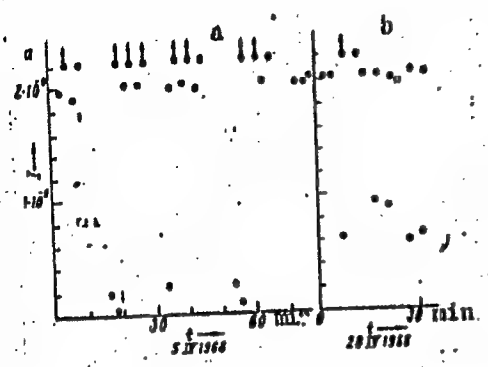

Fig. 3. Electron current

A - Within the magnetosphere;
B - outside the magnetosphere.

ACC NR: AP6034570

authors intend to obtain a more accurate evaluation of these side effects and of their influence on the validity of trap readings. Presented by Academician A. L. Mints on 23 June 1966. Orig. art. has: 3 figures. [FSB: v.2, no.12]

SUB CODE: 03,20,22 / SUBM DATE: 14Jul66 / ORIG REF: 003 / OTH REF: 006

Card 7/7

ZASTENKER, G.N.; SOLNTSEV, G.S.; SHVIKLIN, B.N.

Mechanism of the formation of a high-frequency low-pressure discharge in air. Radiotekh. i elektron. 6 no.3:387-394 Mr '61. (MIRA 14:3)

(Electric discharges)

21652

S/109/61/006/003/007/018
E032/E314

24,2120 (1049, 1482, 1502)
24.2311

AUTHORS: Zastenker, G.N., Solntsev, G.S. and Shvilkin, B.N.

TITLE: On the Mechanism of Formation of a Low-pressure High-frequency Discharge in Air

PERIODICAL: Radiotekhnika i elektronika, 1961, Vol. 6, No. 3, pp. 387 - 394

TEXT: The time of formation of a high-frequency discharge in air was investigated at pressures in the range 0.4 - 30 mm Hg and frequencies 12, 6, 3.3 Mc/s. The discharge was excited in a tube with external disc electrodes (diameter of the electrodes 70 mm, distance between them 21 mm). The time of formation was measured oscillographically and the radiation emitted from the discharge gap was recorded as described in previous papers (Refs. 1, 5). Oscillograms were used to determine the time t_{exp} from the beginning of the formation of the discharge to the instant at which the increase in the current or the glow of the discharge departed from the exponential law. The total time of formation t_{form} was also determined. It was

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On the Mechanism of ....

established experimentally that the time of formation of the low-pressure, high-frequency discharge in air lies between 5 and 200 μs. The transition from the α-discharge to the γ-discharge is accompanied by a reduction in the time of formation. Fig. 6 shows the comparison between the experimental and calculated (Gould and Roberts - Ref. 4) data for the exponential stage of the increase in the electron concentration. In this figure, the full curves are theoretical (Ref. 4) and the experimental points are as follows: 1 - pd = 63 mm Hg; 2 - pd = 6.3 mm Hg; 3 - pd = 40 mm Hg; 4 - pd = 4.2 mm Hg; 5 - pd = 21 mm Hg; 6 - pd = 2.5 mm Hg; 7 - pd = 10.7 mm Hg (E/p is in V/cm.mm Hg; pd is in mm Hg.sec). Fig. 7 illustrates the development of the discharge in time at 12 Mc/s (a - p = 3 mm Hg; W = 23.3%; 6 - p = 10 mm Hg, W = 16.1%; B - p = 20 mm Hg, W = 31%. W is the overvoltage. The continuous curves are theoretical, the crosses and triangles are experimental; 1 - relative increase in the discharge current; 2 - relative increase in the intensity of the glow, I). As can be seen from Fig. 6, a qualitative

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On the Mechanism of ....

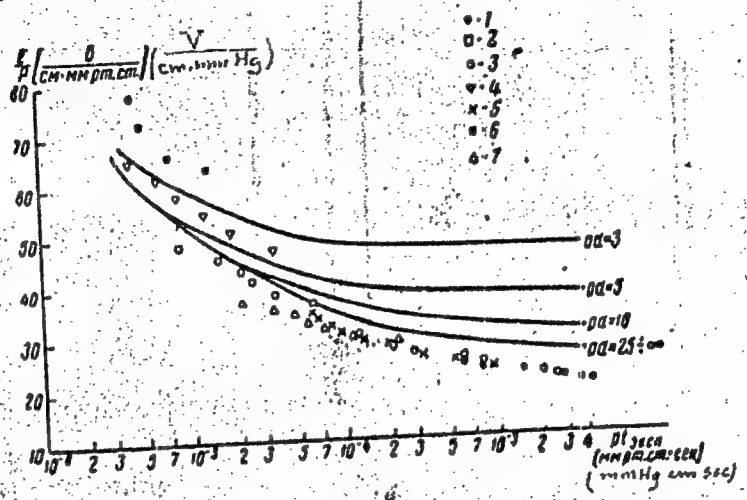
confirmation of the theory given in Ref. 4 is obtained, although exact agreement is not found. Above 5-10 mm Hg t_{exp} is independent of pd , which suggests that electron capture predominates, as compared with the diffusion to the walls. The possible reason for the discrepancy between theory and experiment may be the fact that the electron drift and the space-charge field are not taken into account in theory. In particular, the difference between the theoretical and experimental curves in Fig. 7 is said to be due to distortion of the field by the space charge. It is suggested that corrections for the space charge must be introduced into the theory. There are 7 figures and 11 references: 3 Soviet and 8 non-Soviet.

SUBMITTED: June 29, 1960

Card 3/5

On the Mechanism of ....

Fig. 6:



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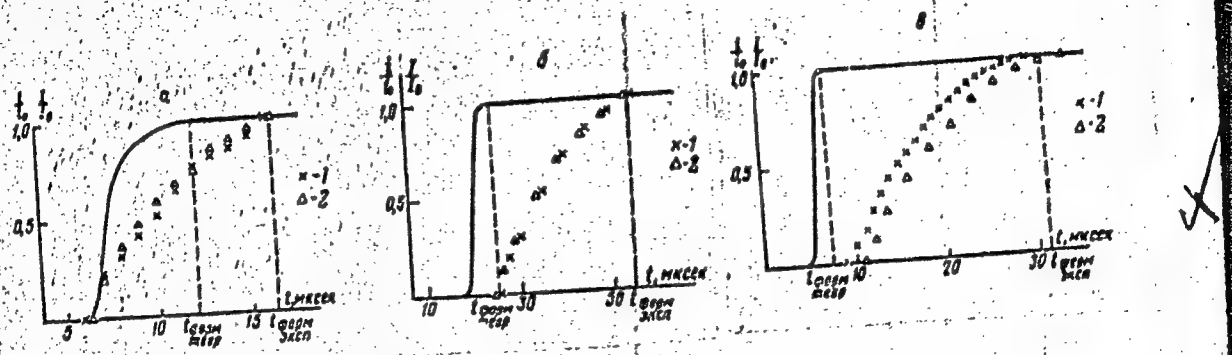
S/109/61/006/003/007/018
E032/E314

On the Mechanism of ....

Fig. 7:



Card 5/5

ZASTENKER, G.N.; SOLNTSEV, G.S.; SHVILKIN, B.N.

Processes occurring in a high-frequency low-pressure discharge with changes in the electrode potential. Radiotekh. i elektron. 5 no.10: 1709-1716 O '60. (MIRA 13:10)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(Plasma (Ionized gases))
(Electric discharge through gases)

ZASTENKER, G.N.

ZASTENKÊV, G. N.

"Some Results of Research on the Formation of High Frequency Discharges and Low Pressures."

paper presented at Second All-Union Conference on Gaseous Electronics, Moscow, 2-6 October '58.

MITSUK, V.Ye.; SOLNTSEV, G.S.; KHOKHLOV, M.Z.; BULKIN, P.S.; ZASTENKER, G.N.

Electric discharge in air at the wave length of 3,2 cm.
Radiotekh. i elektron. 3 no.5:698-703 My '58. (MIRA 11:6)
(Electric discharges) (Microwaves)

9 (9)

AUTHORS: Zastenker, G. N., Solntsev, G. S. SOV/48-23-8-1/25

TITLE: Some Results on the Formation of High-frequency Discharges at Low Pressure

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 8, pp 934 - 940 (USSR)

ABSTRACT: The discharge in argon at a frequency of 3.3 megacycles and at a pressure of from 0.4 to 15 mm Hg is investigated in the present paper. The measuring arrangement is shown in figure 1, the most important parts of which are a high-frequency impulse generator VCh and a photoelectronic multiplier FEU-19. With the entire arrangement the image of the discharge space is projected onto the photocathode of FEU-19 and the impulses of FEU-19 are then shown by an oscilloscope IO-4. Of the results three oscillograms, taken at a pressure of 9.5 mm Hg, are shown. Three stages of the formation of the discharge may be seen distinctly and it is ascertained that at lower pressure the formation progresses more monotonously. The consideration of the time of the statistical delay formed an important problem. Further, the influence of overvoltages on the various stages of discharge and the dependence of the duration of the

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increase of intensity on the pressure at various overvoltages was investigated. The results of measurement are summarized in two diagrams (Figs 4 and 5). In the discussion of the results, equation (2) for the concentration of electrons is mentioned and equation (7) for the time necessary to obtain a certain concentration is derived. It follows in the exponential part that the right-hand part of the Paschen curve obeys an exponential law and may be compared with formula (7). This comparison is made in diagram (Fig 6) and is in good agreement. Finally, it is summarized that the method elaborated here makes it possible to investigate the temporal change of various parameters of high-frequency discharge, that the formation time of low pressure lies in the range of from 300-10 μ sec, and that the theoretical computation of the duration of the initial stage of the discharge, in which the influence of space charge is negligible, shows good agreement with the experimental data. There are 6 figures and 8 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gos. universitet im. M. V. Lomonosova, Fizicheskiy fakul'tet (Moscow State University imeni M. V. Lomonosov Physics Department)

SOV-109-3-6-13/27

AUTHORS: Solntsev, G. S., Zastenker, G. N.

TITLE: Influence of the Humidity of Air on the Formation of Ultra High Frequency Pulse Discharges (Vliyaniye vlazhnosti vozdukha na vozniknoveniye impul'snogo sverkhvysokochastotnogo razryada)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 6, pp 811-818 (USSR)

ABSTRACT: The aim of this work was the investigation of the effect of the humidity of air on the formation of ultra high frequency pulse discharges at a wavelength of 3.2 cm. The measurements were carried out by the method described in an earlier work (Ref.1). The discharge chambers were of two types. The first chamber was in the form of a glass jar having a diameter of 30 cm and a height of 40 cm; this was placed on a metallic plate which was coupled to a rectangular waveguide. The second chamber was in the form of a tube with a flat bottom, to which the end of the waveguide was attached. First, the measurements of the breakdown power were carried out for relative humidities η ranging from 2.10^{-4} to 30%. The results are shown in the graph of Fig.1 where the breakdown power W (in relative units) is plotted as a function of the total pressure p (in mm Hg)

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Influence of the Humidity of Air on the Formation of Ultra High Frequency Pulse Discharges

for various values of η . The statistical delay time as a function of the breakdown power for various values of total pressure and the relative humidities are shown in Figs.2 and 3. From these results it follows that while the breakdown power is almost independent of the relative humidity, the delay time τ_3 tends to increase with increasing η .

The above results can be explained by solving the equation of Posin (Ref.8):

$$dn = \alpha n v \, dt - B_o p n \, dt \quad , \qquad (2)$$

where n is the electron concentration, α is the first Townsend coefficient, v is the electron velocity and B_o is the electron attachment coefficient. By combining Eq.(2) with the equation of motion, as expressed by Eq.(3) (where g is the coefficient of friction and E_o is the amplitude

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Influence of the Humidity of Air on the Formation of Ultra High Frequency Pulse Discharges

of the field), and Eq.(5), the concentration of electrons at the end of a pulse having a duration τ can be expressed by Eq.(6) where n_o is the initial electron concentration. The solution of Eq.(6) is in the form of Eq.(7) which expresses the electric field as a function of the electron concentration n_τ at the end of the pulse. By employing Eq.(7) and substituting appropriate values of the parameters for dry and humid air, it is found that the humidity has a negligible effect on the breakdown field. The average statistical delay time can be expressed by (Ref.10):

$$\bar{\tau}_z = \frac{1}{J_o(\tau_{ион} + \tau_{эф})fw} , \qquad (13)$$

where J_o is the number of electrons produced in the effective volume of the discharge chamber in unit time, $\tau_{эф}$ is the effective pulse duration, f is the pulse

Influence of the Humidity of Air on the Formation of Ultra High Frequency Pulse Discharges

repetition frequency, w is the probability of a breakdown due to the presence of a free electron and $\tau_{эф}$ is the lifetime of an electron. Eq.(13) shows that the average statistical delay should increase with decreasing $\tau_{эф}$. The experimental results are in good agreement with the equation, as can be seen from Fig.4. The authors express their gratitude to Prof. N. A. Kaptsov for directing this work. The paper contains 4 figures and 10 references, 6 of which are Soviet and 4 English.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova(Department of Physics of the Moscow State University, im.M.V.Lomonosov)

SUBMITTED: January 22, 1957

Card 4/4 1. Pulses - Analysis 2. Pulses - Moisture factors 3. Air - Properties 4. Mathematics - Applications

ZASTENKER, G.N.

48702

24,2120 SOV/109-4-8-22/35

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

I.M. Podgornyy and N.G. Koval'skiy - "New Data on X-ray Radiation During Pulse Discharges"
V.A. Khrabrov and M.M. Sulkovskaya dealt with the investigation of the neutron radiation in powerful gas discharges in chambers with conducting walls.
E.A. Borzunov et al. - "Investigation of the Gas Discharge in a Conical Chamber".
S.M. Osovets et al. - "A Turn of Plasma in Transverse Magnetic Field".
I.G. Kesayev "Data on the Division of a Cathode Spot on Mercury in a Low-pressure Arc" (see p 1289 of the journal).
A.E. Robson (England) - "A New Theory of the Cathode Spot" (see p 1295 of the journal).
L.N. Breusova - "Positive Column in a Hydrogen Discharge With Stationary and Pulse Loads".
I.G. Nekrashevich and A.A. Labud - "Current Distribution on the Surface of Electrodes in Electric Pulse Discharges".
L.S. Ryg - "Some Properties of Gas Discharges in Low-voltage in Halogen Counters".
G.Y. Glotova and V.L. Granovskiy - "Comparison of the Initial De-ionisation in the Isotopes of Hydrogen (H and D)".

Card 9/14

L.A. Akul'zina communicated some results on the pre-breakdown current pulses at low pressures.
M.Ya. Vasil'yeva and A.A. Zaytsev - "Charge-density oscillation Waves in Cylindrical Plasma".
L. Pekarek of Czechoslovakia communicated some information on the wave-like phenomena in gas-discharge plasma.
D.G. Brezhnev dealt with the problem of the determination of the energy of fast ions in pulse discharges.
B.B. Kadomtsev - "Convection Instability of a Plasma String".
S.I. Braginskiy and V.D. Shafranov - "Theory of a High-temperature Plasma String".
The fifth section was presided over by N.A. Kaptsov and dealt with high-frequency currents in gases. The following papers were read:
V.Ye. Golant - "Formation of Ultra-high Frequency Pulse Discharges in Inert Gases".
G.I. Pateyuk - "Influence of the Boundary Conditions on the Formation and Maintenance of High-frequency Discharges".

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P.S. Bulkin et al. - "Investigation of a Self-maintained Ultra-high Frequency Pulse Discharge and the Process of its Development".
G.N. Zastenker and G.S. Solntsev - "Some Results of the Investigation of the Formation of Low-pressure High-frequency Discharges".
G. Parzenau (USA) - "Conductivity of Weakly Ionised Plasma".
A.A. Kuzovnikov - "The Conditions of Transition From High-frequency Corona Discharge at Atmospheric Pressures".
V.Ye. Golant - "The relationship Between the Characteristics of the Ultra-high Frequency Current and the Direct Current in Gas Discharges".
B.B. Lagov'yer analysed the conductivity of the disintegrating plasma in the window of a resonance discharge tube.
S.M. Levitskiy and I.P. Shashurin dealt with the applicability of the probe method to high-frequency discharges (see p 1238 of the journal).

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The paper by V. Ye. Mitsuk et al. was devoted to the investigation of the ultra-high frequency plasma by means of the Stark effect.
G.S. Solntsev et al. dealt with the problem of electric fields in a high-frequency discharge at low pressures.
Ye. Badareu of Rumania read a paper entitled "High-frequency Discharges in Methane".
The work of the sixth section was devoted to the problems of plasma and its radiation; the section was presided over by V.A. Fabrikant. The following papers were read:
Yu.M. Kagan - "New in the Probe Methods of Plasma Investigation"
V.I. Drozdov - "Oscillographic Measurements in Plasma".
V.A. Simonov and A.G. Mileshkin - "Investigation of the Movement of Plasma by Means of a Mass Spectrometer of the Transit Time".
A.V. Rubchinskiy - "Application of the Oscillations of a ... Gas ..."

ZASTENKER G.N.

109-3-5-12/17

AUTHORS: Mitsuk, V.Ye., Solntsev, G.S., Khokhlov, M.Z., Bulkin, P.S. and Zastenker, G.N.

TITLE: Electrical Discharge in Air at the Wavelength of 3.2 cm (Elektricheskiy razryad v vozdukhe na dline volny 3.2 cm)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol III, Nr 5, pp 698 - 703 (USSR)

ABSTRACT: The paper describes a method of measurement of the breakdown electric fields and the time lags in the electrical discharges in air and gives some experimental results. The block schematic of the experimental equipment is shown in Fig.1. This employed a pulsed magnetron operating at a wavelength of λ = 3.19 cm and having a repetition frequency of 300 c/s; the pulses were rectangular and had a duration of 2 μsec. The output of the magnetron was applied to a waveguide system which permitted the variation of the transmitted power and made it possible to measure the standing wave ratio and to observe the form of the pulse. The discharge was formed at the "neck" of a horn, which was situated under an evacuated glass jar. The seal between the input of the horn and the output of the waveguide was in the form of a polyethylene plate. An external radio-active source containing Co^{60}, having an activity of 10 millicurie was used as the ioniser for the

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gas particles in the horn; the quanta of the γ-rays from the source had energies up to 1.2 MeV. The energy and the directivity of the γ-rays could be controlled by means of a special gun made of lead and fitted with a number of lead filters. The humidity of the air under the vacuum jar could be controlled by means of a special vessel filled with water whose temperature was kept constant by means of a thermostat. First, the statistical time lags of the discharge were measured and the results are shown in Fig.3; curves I, II and III were taken for three different intensities of the ionising source. Fig.4 shows the statistical time lags as a function of the applied electrical field for the maximum intensity of the ionising source; Curve I was taken at a pressure of p = 32.4 mmHg and curve II at p = 45.5 mmHg. Since the field intensities at the input of the horn (in the area of its neck) could not be measured directly, it was of interest to determine the relationship between the power transmitted through the waveguide and the field at the input of the horn. The problem is analysed in some detail and it is shown that for the investigated horn (see Fig.5) it could be assumed that the field in the horn was approximately equal to that in the waveguide. By using

Electrical Discharge in Air at the Wavelength of 3.2 cm

this result, it was possible to plot the values of the breakdown fields as a function of the pressure in the horn; the resulting curve is given in Fig.7; from this, it is seen that the lowest field is required at a pressure of about 5 mmHg. The results obtained agree with those reported by Posin (Ref.1), except that the intensity of the ionising source appeared to have no significant effect on the value of the breakdown field.
The authors express their gratitude to Professor N.A. Kaptsov for directing this work.
There are 7 figures, 6 references, 3 of which are Soviet and 3 English.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova (Physics Department of Moscow State University imeni M.V. Lomonosov)

SUBMITTED: January 22, 1957

AVAILABLE: Library of Congress

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1. Electric fields-Measurement-Methods 2. Magnetrons-Applications
3. Waveguides-Applications

ZASTENKER, Grigoriy Semenovich; ZHAK, D.K., kand. ekon. nauk, red.; PRIVEZENTSEVA, A.G., red.; PYATAKOVA, N.D., tekhn. red.

[Planning machine accounting with the use of digital punched card machines] Proektirovanie mekhanizirovannogo ucheta s primeneniem tsifrovykh schetno-perforatsionnykh mashin; uchebnoe posobie dlia podgotovki proektirovshchikov mekhanizirovannogo ucheta. Moskva, Gosstatizdat, 1963. 487 p. (MIRA 16:8)

(Machine accounting) (Punched card systems)

ZASTENKER, Grigoriy Semenovich; MILOV, Aleksandr Aleksandrovich; SVETLOVA, Ye.F., red.; MAYSKAYA, N.I., red.; IL'YUSHENKOVA, T.P., tekhn. red.

[Control and output of work at machine accounting centers] Kontrol' i vypusk rabot na mashinoschetnykh stantsiiakh. Moskva, Gosstatizdat TsSU SSSR, 1961. 95 p. (MIRA 15:3)
(Machine accounting--Study and teaching)

KREVINSKAYA, M.Ye.; NIKOL'SKIY, V.D.; POZHARSKIY, B.G.; ZASTENKER, Ye.Ye.

Properties of plutonyl solutions in nitric acid. Part 1: hydrolysis of plutonyl nitrate. Radiokhimiia 1 no.5:548-553 '59. (MIRA 13:2)

(Plutonyl nitrate)

ZASTENKER, Ye.Ya.; BEDINA, O.L.; NIKOL'SKIY, V.D.; POZHARSKAYA, M.Ye.

Oxidation of plutonium dioxide by atmospheric oxygen.
Radiokhimiia 5 no.1:141 '63. (MIRA 16:2)
(Plutonium oxides)
(Oxygen)

S/186/63/005/001/012/013
E075/E436

AUTHORS: Zastenker, Ya.Ya., Bodina, O.L., Nikol'skiy, V.D. Pozharskaya, M.Ye.

TITLE: Oxidation of plutonium dioxide with atmospheric oxygen

PERIODICAL: Radiokhimiya, v.5, no.1, 1963, 141

TEXT: PuO_2 was fused with NaOH and KOH at 550 to 600°C in the presence of atmospheric O_2. After washing with ethyl alcohol the residue was a dark-brown crystalline powder, soluble in mineral acids. Chemical and spectroscopic analyses indicated that the powder consists of alkali metal plutonates having the composition of Me_2PuO_4 to Me_6PuO_6. It was concluded that $Pu^{(IV)}O_2$ was oxidized to $Pu^{(VI)}O_3$ which reacted with the hydroxides and formed the alkali metal plutonates.

SUBMITTED: October 31, 1962

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KREVINSKAYA, M.Ye.; NIKOL'SKIY, V.D.; POZHARSKIY, B.G.; ZAS'TENKER, Ye.Ye.

Preparation and properties of plutonyl nitrate. Radiokhimiia 1 no.5:562-566 '59. (MIRA 13:2)
(Plutonyl nitrate)

ZASTER, L.I.

The RAF-8 "Spriditis" motorbus. Biul.tekh.-ekon.inform. no.2:75-77 '59. (MIRA 12:3)

(Riga--Motorbuses)